

CHAPTER 19

PARAPETS AND BRIDGE RAILINGS

Ornamental barriers may be justified for aesthetic reasons for restoration of historic bridges or for bridges in historic areas. Consideration should be given to install aesthetically pleasing railings and parapets in heavily travel pedestrian areas. Stone or brick facing, including stamped concrete and form liners may be considered.

Two types of aesthetically treated fascia barriers: Jersey barriers and vertical face are commonly used in the District. Vertical barriers are used in combination with sidewalks or bicycle facilities. Vertical-face barriers may also be used where form liners or stone facings are required for aesthetics. F- shape barriers may be used on freeway bridges when approved by the Chief Transportation Engineer. The standard height for F-shape barriers is 32 in. Higher barriers, 42 in. on bridges carrying high volumes of truck traffic, may be justified with the approval of the Bridge Design Engineer. Higher median barriers may also be justified to reduce headlight glare.

Every type of barrier used on District bridges must have passed crash tests accepted by the Federal Highway Administration. Refer to the sections to follow for the crash tested categories of barriers to be used in accordance with **NCHRP Report 350, “Recommended Procedures for the Safety Performance Evaluation of Highway Features”**.

19.1 Curb Barriers on Pedestrian Sidewalks

The following types of Bridge Rail or Jersey Barrier along the curbs will be considered when sidewalks are provided for pedestrian and/or bike traffic on bridges over 200 ft. long:

- District’s Standard Bridge Rail, minimum height 27 in. (TL –2)
- Steel Bridge Rail, minimum height 27 in. (TL-3) (Similar to the District’s Standard Rail)
- Architectural Jersey Barrier, minimum height 32 in. (TL-4)

19.2 Fascia Barriers on Top of Sidewalks

The following types of vertical fascia barriers will be considered when the curb barriers are not provided and there are sidewalks provided for pedestrian and/or bike traffic. Under no circumstances the Jersey Barriers will be installed on top of sidewalks along the bridge fascia:

- Concrete Parapet with Coping, minimum height 27 in. (TL- 3)
- Stone face Parapet with Coping, minimum height 27 in. (TL- 3)
- Concrete Parapet with Coping, minimum height 32 in. (TL-4)

- Aesthetic Barriers for Historic Bridges and Special Situations

19.3 Pedestrian Rails

A vertical barrier with a handrail should be used on bridges with sidewalks. The concrete section is 27 in. high. Where bicycle paths must be carried across structures, bicycle railings may be justified. The designer should contact the DDOT Bicycle Program Manager to determine where bicycle paths are located.

The following types of steel railings (as deemed necessary), will be considered when pedestrian sidewalks and/or bikeways are provided on bridge:

- Standard Pedestrian Railing for a combined height of 3 ft. 6 in.
- Standard Pedestrian/Bike Railing for a combined height of 4 ft. 6 in.
- Approved Safety Fence Rail for a combined height of 8 ft. 2 in.
- District's approved Architectural Railings, on top of Stone Face Parapet.

When curb barriers are installed, the standard 3 ft. 6 in. high Pedestrian Railing or, 4 ft. 6 in. high Pedestrian/Bike Railing, or 8 ft. 2 in. highly approved Safety Fence (as deemed necessary), will be installed directly on the sidewalks along the fascia edge of the bridge.

19.4 Fascia Barriers on Bridges without Sidewalks

When there are no pedestrian sidewalks on the bridge, the following types of barriers will be considered to meet the vehicular traffic requirements:

- District's standard Architectural Jersey Barrier, minimum height 32 in. (TL-4) (Approved ornamental rail on top of barriers)
- District's standard Architectural Jersey Barrier and Traffic Rail, minimum height 42 in. (TL-5) (Approved ornamental traffic rail on top of barriers)

19.5 Architectural Safety Fence on Bridge

The following conditions may warrant screening/fencing of acceptable standards on structures. The current AASHTO publication, **A Guide For Protective Screening Of Overpass Structures**, may be referred to for guidance.

Safety Fence is provided on selected bridges to prevent the throwing of debris onto vehicles passing beneath the bridge. Safety Fence will be provided on a case-by-case basis. Refer to **AASHTO Publication A Guide for Protective Screening of Overpass Structures**.

Shields are used on railroad overpasses to prevent train headlights from blinding vehicle drivers and over high voltage catenary wires. The design of Safety Fence

and Safety Shield should be aesthetically pleasing. Chain-link fence will not be allowed on bridge structures.

19.5.1 Warrants for Safety Fence

- Standard height is 8' - 2", including 2'-0" curved at top for sidewalks and pedestrian bridges.
- Highway carrying, grade separation or high-level bridges with facility for pedestrian traffic.
- Expressed concern due to recorded incidents of vandalism from a structure.
- Existing or potential for pedestrian traffic nearby
 - Schools, churches, etc.
 - Built up areas
 - Shopping areas, malls
- Locations where existing railing or parapet conditions are substandard with regard to pedestrian safety.
- On overpasses where property is subject to damage, such as buildings or power stations and railroads located beneath the structure.
- Other locations as deemed necessary by the department.

19.5.2 Guardrail to Barrier Connections

The post spacing for guardrail approaching a bridge is decreased to provide a greater resistance to impact. The guardrail must be solidly anchored to the bridge barrier.

19.5.3 Sidewalks

If the approach roadway has a sidewalk, the bridge sidewalk width should match the approach. Bridge sidewalks may be justified where there is no approach sidewalk. These will be evaluated on a case-by-case basis considering the need, cost and right of way. Minimum width for sidewalks on bridges is 6' - 0" clear.

19.5.4 Curbs

The District uses 9 in. high granite curbs for bridges with sidewalks and must be tapered at Approach Slab to match 7 in. high curb on approach roadway.